INVESTOR IN PEOPLE

| 804| 2236

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

PRIORITY DOCUMENT

SUBMITTED OR TRANSMITTED IN
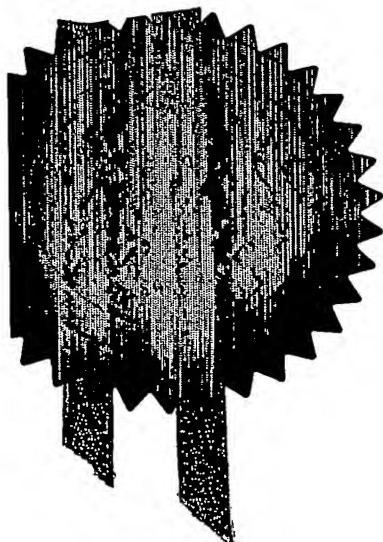COMPLIANCE WITH RULE 17.1(a) OR (b)

REC'D **0 2 JUL 2004**

| WIPO | PCT |

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated   21 April 2004

Patents Form 1/77

Patents Act 1977
(Rule 16)

The Patent Office

Request for grant of a patent
*(See notes on the back of this form. You can
also get an explanatory leaflet from the Patent
Office to help you fill in this form)*

1/77

10JUL03 EB21634-1 D 28 9
P01/7700 0.00-0316168.4

The Patent Office

Cardiff Road
Newport
Gwent NP10 8QQ

1.	Your reference	PHGB 030109GBP

2.	Patent application number *(The Patent Office will fill in this part)*	**0316168.4**	10 JUL 2003

3.	Full name, address and postcode of the or of each applicant *(underline all surnames)*	KONINKLIJKE PHILIPS ELECTRONICS N.V. GROENEWOUDSEWEG 1 5621 BA EINDHOVEN THE NETHERLANDS
	Patents ADP Number *(if you know it)*	07419294001
	If the applicant is a corporate body, give the country/state of its incorporation	THE NETHERLANDS

4.	Title of the invention	A METHOD OF GENERATING A MAP DISPLAY FOR A GRAPHICAL USER INTERFACE

5.	Name of your agent *(if you have one)*	
	"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*	Philips Intellectual Property & Standards Cross Oak Lane Redhill Surrey RH1 5HA
	Patents ADP number *(if you know it)*	08359655001

6.	If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number	Country	Priority Application number	Date of filing

7.	If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application	Number of earlier application	Date of filing *(day/month/year)*

8.	Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer "Yes" if:* a) *any applicant named in part 3 is not an inventor, or* b) *there is an inventor who is not named as an applicant, or* c) *any named applicant is a corporate body.* See note (d))*	YES

Patents form 1/

Patents Form 1/77

9. Enter the number of sheets for any of the following
items you are filing with this form.
Do not count copies of the same document.

Continuation sheets of this form

Description	4
Claims(s)	2 *CF*
Abstract	1
Drawings	2 only

10. If you are also filing any of the following,
state how many against each item:

Priority Documents

Translations of priority documents

Statement of inventorship and right

to grant of a patent (*Patents Form 7/77*)

Request for preliminary examination and

search (*Patents Form 9/77*)

Request for substantive examination

(*Patents Form 10/77*)

Any other documents

(*Please specify*)

11. I/We request the grant of a patent on the basis of this application.

Signature   *S Townsend*   Date   9/7/03

12. Name and daytime telephone number of
person to contact in the United Kingdom   01293 81 5339   S TOWNSEND

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

a) If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.

b) Write your answers in capital letters using black ink or you may type them.

c) If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.

d) If you have answered "Yes" Patents Form 7/77 will need to be filed.

e) Once you have filled in the form you must remember to sign and date it.

f) For details of the fee and ways to pay please contact the Patent Office.

Patents Form 1

DESCRIPTION

A METHOD OF GENERATING A MAP DISPLAY
FOR A GRAPHICAL USER INTERFACE

5

This invention relates to a method of generating a map display for a graphical user interface (GUI) and to a computer program, a computer-readable storage medium, server and apparatus for the same. In particular, the invention relates to such a method comprising the steps of displaying a map

10 and highlighting an area on the map surrounding a position fix wherein the size of the area corresponds to the accuracy of the position fix.

Japanese patent application, publication number 64-026177 discloses a "measured position display device" which displays a circle about a measured

15 position whose radius corresponds to the measured position accuracy.

In accordance with the present invention, a method of generating a map display of the aforementioned type is provided further comprising the step of highlighting a second area on the map surrounding a second position fix

20 wherein the size of the second area corresponds to the accuracy of the second position fix wherein either (a) when the first and second areas overlap, either (i) the one corresponding to the most recent or accurate position fix is displayed on top of the other or (ii) the highlighting of the overlapping area is different from that of those parts of the first and second areas which do not

25 overlap, or (b) the manner in which at least one of the position fixes is obtained is indicated by the colour of the highlight.

Further provided in accordance with the present invention is a method of generating a map display of the aforementioned type wherein the area highlighted on the map surrounding the position fix is a shape other than a

30 circle.

Yet further provided in accordance with the present invention is a computer program, a computer-readable storage medium, server and computer for the same as claimed in claims 5 to 8.

5   The present invention will now be described, by way of example only, with reference to the accompanying figures in which:

Figure 1 shows, schematically, mobile cellular telephones MS1 and MS2 communicating together via respective nearby cellular telephone network base station BS1 and BS2;

10   Figures 2 to 4 show telephone displays generated in accordance with the present invention; and

Figure 1 shows mobile cellular telephones MS1 and MS2 in the possession of respective users (not shown) and registered with respective

15   nearby cellular telephone network base stations BS1 and BS2 facilitating voice and data communication with that base station and corresponding cellular telephone network (not shown). Each mobile telephone comprises a GPS receiver (not shown). Mobile cellular telephones MS1 and MS2 operate in accordance with the present invention as illustrated in the following example

20   scenarios:

Example 1

.Referring to figure 2, suppose the user of telephone MS1 instructs it to display the user's present location (i.e. that of telephone MS1) on a map.

25   Typically, the most readily available estimate of such a location will be the cell area corresponding to the coverage of the base station BS1 in figure 2 with which telephone MS1 is registered (illustrated in by the diagonal, top left to bottom right hatching).

Thereafter, enhanced cell positioning is used to further limit the area in

30   which mobile telephone MS1 is estimated to be located (illustrated by the diagonal, top right to bottom left hatching). Enhanced cell positioning typically involving measurements in respect of not only the base station BS1 with which

telephone MS1 is registered but also other nearby base stations that can hear or transmit to telephone MS1.

Lastly, the GPS receiver of mobile telephone MS1 returns a position fix together with an estimate of error (illustrated by the horizontal hatching). Note,
5 network based and GPS based cellular telephone positioning are well known and hence will not be described in any further detail.

All three hatched areas are displayed over the map with the most recent and most accurate position fix, i.e. the GPS fix, on top of the enhanced cell position fix which in turn is on top of the cell area position fix. By "on top", it is
10 meant the hatching of one area replaces that of a previous area. As shown in figure 2, the boundaries of hatching are not obscured by hatching on top, but this need not be the case.

Shaded or dynamically highlighted areas, e.g. flashing, could be used as an alternative to hatching. Also, the manner in which each of the position
15 fixes were obtained could be indicated by the colour of the highlight.

Example 2

Referring to figure 3, as example 1 except that rather than display the hatched areas one on top of another, the hatching is merged. The density of
20 hatching therefore directly relates the likely position of the mobile telephone MS1.

Were the areas highlighted by shading instead of hatching, the shading of the overlapping areas could be done by alpha blending. Even if the first and second were areas highlighted by the same colour of shading, the overlapping
25 areas would appear darker, i.e. still distinguished from those parts of the areas which do not overlap.

Example 3

Suppose the user of telephone MS1 instructs it to display the user's
30 present location (i.e. that of telephone MS1) on a map together with the present location of a friend in possession of telephone MS2.

Mobile telephone MS1 polls telephone MS2 to request it return a position fix using its GPS receiver together with an estimate of position error which telephone MS2 does (illustrated in figure 4 by the diagonal, top left to bottom right hatching). Note, the exchange of positioning information between

5   two mobile telephones is known.

Mobile telephone MS1 also determines a position fix using its GPS receiver together with an estimate of both longitude and latitude error (illustrated in figure 4 by the diagonal, top right to bottom left hatching of an elliptical shape where the major and minor axis are the longitude and latitude

10   respectively). Note, the computation of GPS accuracy in longitude and latitude is known from at least Section 7.1.4 of GPS Principles and Applications (Editor, Kaplan) ISBN 0-89006-793-7 Artech House.

Both hatched areas are displayed over the map.

15   Implementation of a method according to the present invention in such a mobile telephone or indeed any other computer system having a display and a processor may be readily accomplished in hardware, in software (stored either in situ on a computer, on storage media or at a server for transmission to such a computer) or a combination of both. Of course, computer

20   programming and / or computer hardware configuration is well known and would be accomplished by one of ordinary skill in the art without undue burden.

CLAIMS

1.   A method of generating a map display for a graphical user interface comprising the steps of:

5   - displaying a map

- highlighting a first area on the map surrounding a first position fix wherein the size of the area corresponds to the accuracy of the first position fix; and

- highlighting a second area on the map surrounding a second position

10   fix wherein the size of the second area corresponds to the accuracy of the second position fix,

wherein, when the first and second areas overlap, the one corresponding to the most recent or accurate position fix is displayed on top of the other.

15

2.   A method of generating a map display for a graphical user interface comprising the steps of:

- displaying a map

- highlighting a first area on the map surrounding a first position fix

20   wherein the size of the area corresponds to the accuracy of the first position fix; and

- highlighting a second area on the map surrounding a second position fix wherein the size of the second area corresponds to the accuracy of the second position fix,

25   wherein, when the first and second areas overlap, the highlighting of the overlapping area is different from that of those parts of the first and second areas which do not overlap.

3.   A method of generating a map display for a graphical user interface comprising the steps of:

- displaying a map

- highlighting a first area on the map surrounding a first position fix
5   wherein the size of the area corresponds to the accuracy of the first position fix; and

- highlighting a second area on the map surrounding a second position fix wherein the size of the second area corresponds to the accuracy of the second position fix,

10   wherein the manner in which at least one of the position fixes is obtained is indicated by the colour of the highlight. -

4.   A method of generating a map display for a graphical user interface comprising the steps of:
15   - displaying a map

- highlighting an area on the map surrounding a position fix wherein the shape, being a shape other than a circle, and the size of the highlighted area corresponds to the accuracy of the position fix.

20   5.   A computer program comprising instructions for performing a method according to any preceding claim.

6.   A computer-readable storage medium having recorded thereon data representing instructions for performing a method according to any of
25   claims 1 to 4.

7.   A server configures to transmit data representing instructions for performing a method according to any of claims 1 to 4.

30   8.   Apparatus having a display and a processor configured to perform a method according to any of claims 1 to 4.

ABSTRACT

A METHOD OF GENERATING A MAP DISPLAY
FOR A GRAPHICAL USER INTERFACE

5

A method of generating a map display for a graphical user interface (GUI) comprising the steps of displaying a map, highlighting a first area on the map surrounding a first position fix wherein the size of the area corresponds to the accuracy of the first position fix and highlighting a second area on the map 10 surrounding a second position fix wherein the size of the second area corresponds to the accuracy of the second position fix. Either (a) when the first and second areas overlap, either (i) the one corresponding to the most recent or accurate position fix is displayed on top of the other or (ii) the highlighting of the overlapping area is different from that of those parts of the first and second 15 areas which do not overlap, or (b) the manner in which at least one of the position fixes is obtained is indicated by the colour of the highlight. The area highlighted on the map surrounding the position fix may be a shape other than a circle.
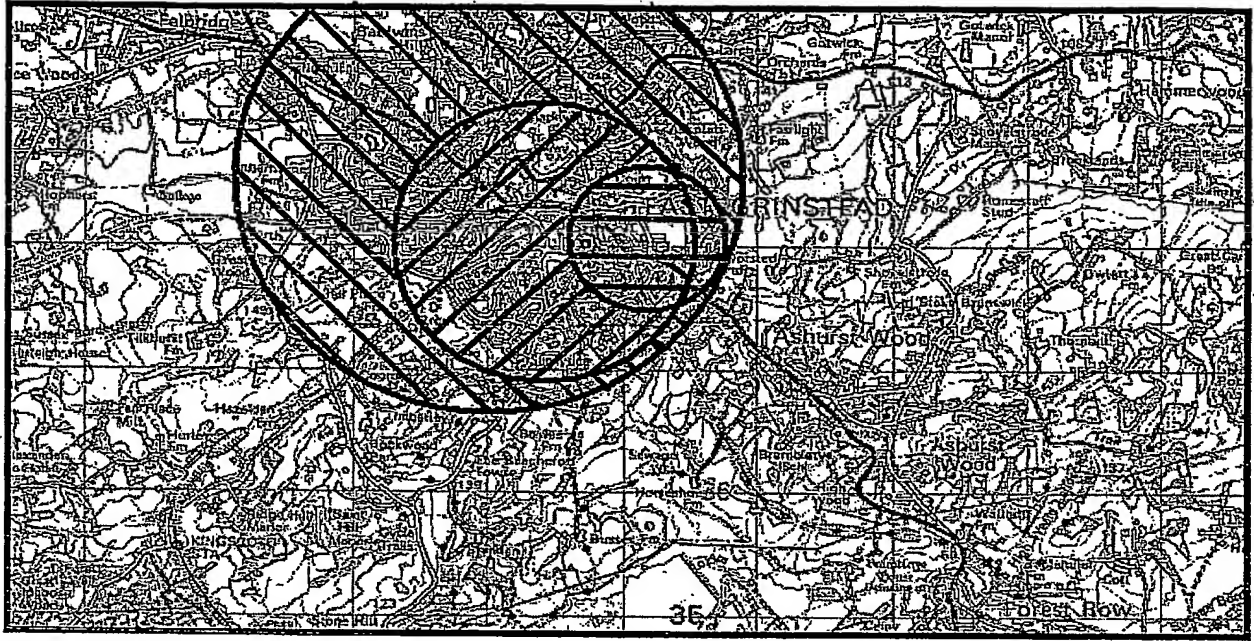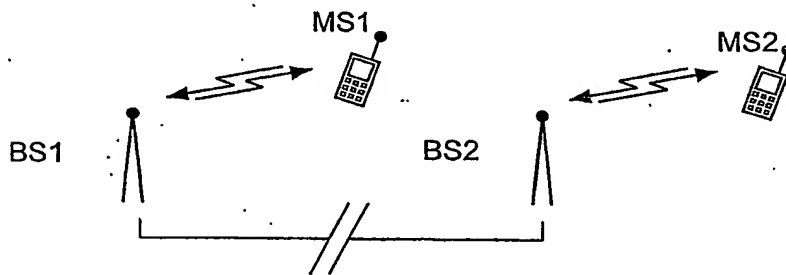
20   [Figure 2]

FIG. 2

FIG. 1

FIG. 3
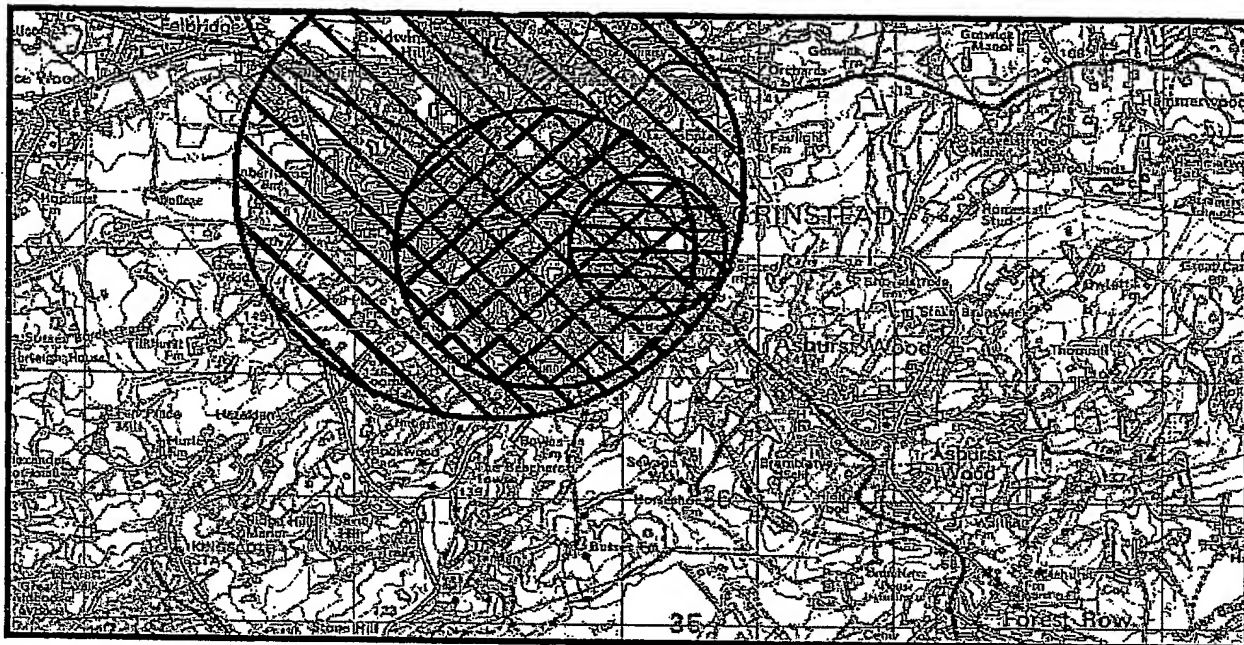

FIG. 4

PHGB 030109

PCT/IB2004/002236